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EXAMINER

HAMMOND, BRIGGITTE R

ART UNIT PAPER NUMBER

2833

DATE MAILED: 12/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
10/024,054

Applicant(s)
B. Caldwell

Examiner
Brigitte R. Hammond

Art Unit
2833



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Sep 2, 2003
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 27-36 and 38-58 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 27, 28, 30, 32, 33, 35, 36, 38, 42, 45-50, 54, and 55 is/are rejected.
- 7) ☒ Claim(s) 29, 31, 34, 39-41, 43, 44, 51-53, and 56-58 is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on Sep 2, 2003 is/are a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ 6) ☐ Other:

Art Unit: 2833

DETAILED ACTION II

1. This action is in response to applicant's amendment received on September 20, 2003 and filed as Paper No. 5. Applicant's cancellation of claims 1-26 and 37 is acknowledged.

Claim Objections

2. Claim 55 is objected to because of the following informalities: in line 6, change "physical" to --physically--. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

4. Claims 27,28,30,32,33,36,38,45-50,54 and 55 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamagishi 6,083,013.

Regarding claim 27, Yamagishi discloses a circuit structure comprising an integrated circuit package P, a circuit board 8, a support member 1, at least one signal pin 3, the support

Art Unit: 2833

member and the at least one signal pin 3 disposed between the integrated circuit package and the circuit board, the signal pin electrically and physically interconnecting the circuit board and the integrated circuit package.

Regarding claim 28, the support member 1 is a two or more pin stanchion, the stanchion being a vertically oriented insulated member with holes 1a allowing the passage of the pin.

Regarding claim 30, the support member 1 encloses area (see area that encloses pins 3 see, fig. 2).

Regarding claim 32, the support member 1 is a layer of insulating material (col. 3, lines 20-22), oriented parallel to the plane of major extension of the circuit board (see fig. 1a), the support member having holes 1a, allowing the passage of the pin.

Regarding claim 33, the support member forms a permanent part of the circuit structure.

Regarding claims 36 and 45, the signal pin is fluted (see fig. 5b) and supported by the support member 1.

Regarding claims 38 and 42, the signal pin has a conductive cap at one end (see fig. 4c & 4d).

Regarding claim 47, the integrated circuit package is a ball grid array package.

Regarding claim 48, the integrated circuit package is a pin ball grid array package.

Regarding claims 49 and 50, the signal pin 3 is attached to the integrated circuit package with metallic solder which is a conductive adhesive.

Art Unit: 2833

Regarding claim 54, the support of Yamagishi is “capable” of being “washed away with water” (or any other force).

Regarding claim 55, Yamagishi discloses a circuit structure comprising an integrated circuit package P, a circuit board 8, a support member 1, at least one fluted signal pin 3 (see fig 5b), the at least one signal pin 3 disposed between the integrated circuit package and the circuit board, the signal pin electrically and physically interconnecting the circuit board and the integrated circuit package.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamagishi in view of Shah et al. Yamagishi does not disclose the pin being cylindrical and non-fluted.

However, cylindrical and non-fluted pins are well known in the art as evidenced by Shaw et al.

Shaw et al. disclose circuit structure comprising a cylindrical and non-fluted pin 26.

Art Unit: 2833

Therefor it would have been obvious to one of ordinary skill to modify the circuit structure of Yamagishi by making the pins cylindrical and non-fluted pins as taught by Shaw et al. for ease of manufacturing.

Allowable Subject Matter

7. Claims 29,31,34,39-41,43,44,51-53 and 56-58 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including **all** of the limitations of the base claim **and any intervening claims**. **regarding claim 29**, patentability resides, at least in part, in the support structure being placed only at the corners, in combination with the other limitations of the base claim; **regarding claim 31**, patentability resides, at least in part, in the circuit structure having signal pins which are unsupported by a stanchion in the area enclosed by the support member, in combination with the other limitations of the base claim; **regarding claim 34**, patentability resides, at least in part, in the support structure dissolving with heat combination with the other limitations of the base claims; **regarding claim 39**, patentability resides, at least in part, in the cap being screwed upon the pin, combination with the other limitations of the base claim; **regarding claim 40**, patentability resides, at least in part, in the cap being made of a high dielectric constant material, combination with the other limitations of the base claim; **regarding claim 43**, patentability resides, at least in part, in the cap of the circuit structure adhering to a recess on the IC package through an adhesive melt, in combination with the other limitations of the base claim; **regarding claim 46**, patentability resides, at least in part, in the cap having a height approximately equal to one third of the diameter of a solder ball used to connect the integrated structure package to the circuit board, in combination with the other

Art Unit: 2833

limitations of the base and intervening claims; **regarding claim 51**, patentability resides, at least in part, in the support member being a dissolving type of membrane, in combination with the other limitations of the base claims and **regarding claim 54**, patentability resides, at least in part, in the support member being a dissolving type of membrane, in combination with the other limitations of the base claims.

Response to Arguments

8. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground of rejection.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Barabi et al. 6,220,870 and Li et al. 6,551,112 were cited for devices with similar pin supports.

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period

Art Unit: 2833

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brigitte R. Hammond whose telephone number is (703) 305-0032.

The examiner can normally be reached on Monday - Thursday from 8:30 A.M. to 6:00 P.M. The examiner can also be reached on alternate Fridays.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.

Brigitte R. Hammond
December 1, 2003

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